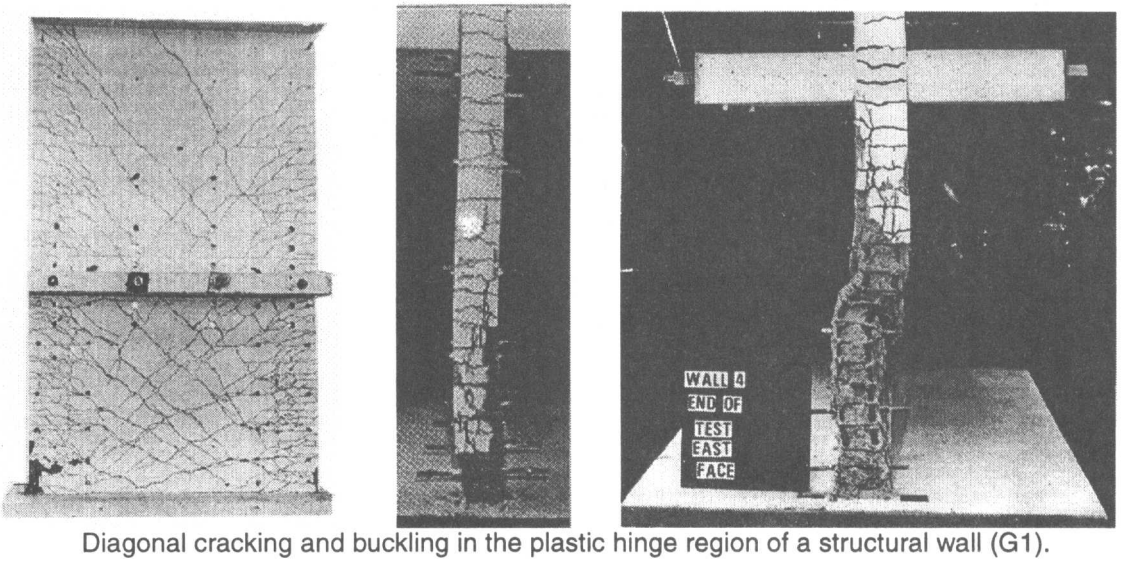
## DAMAGE PATTERNS AND HYSTERETIC RESPONSE

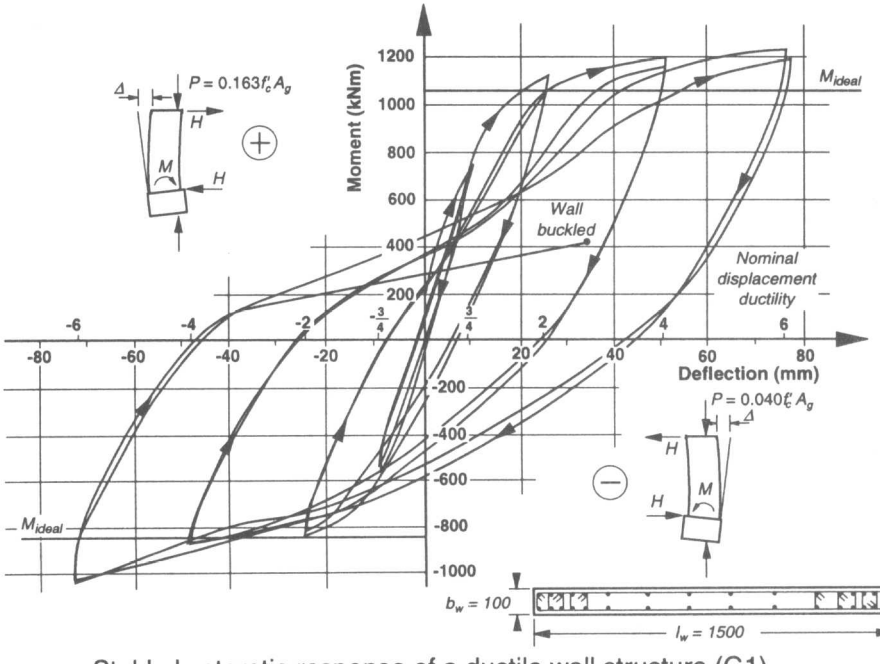
| | |
|---|---|
| System: | **Reinforced Concrete** |
| Component Type: | **Isolated Wall or Stronger Wall Pier** |
| Predominant Behavior Mode: | **Flexure/Out-of-Plane Wall Buckling** |
| Secondary Behavior Mode: | — |

RC1G **Example 2 of 2**

| | |
|---|---|
| Reference: | Paulay and Priestley (1992) |
| Specimen: | Wall 2 and Wall 4, Figure 5.37 of reference |




Diagonal cracking and buckling in the plastic hinge region of a structural wall (G1).



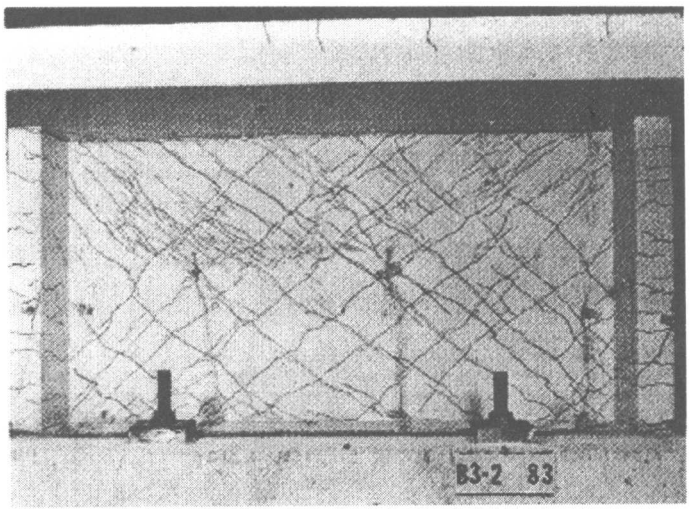

Stable hysteretic response of a ductile wall structure (G1).

## DAMAGE PATTERNS AND HYSTERETIC RESPONSE

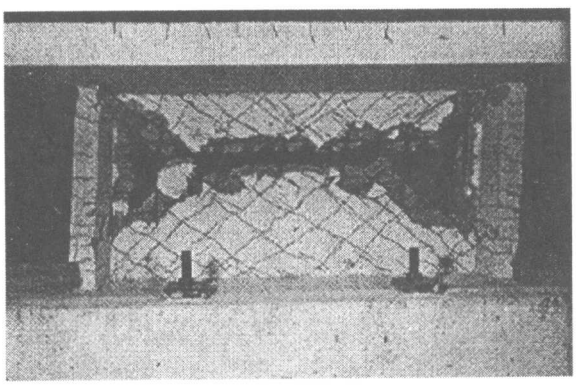
| | |
|---|---|
| System: | **Reinforced Concrete** |
| Component Type: | **Isolated Wall or Stronger Wall Pier** |
| Predominant Behavior Mode: | **Preemptive Web Crushing** |
| Secondary Behavior Mode: | — |

RC1I **Example 1 of 2**

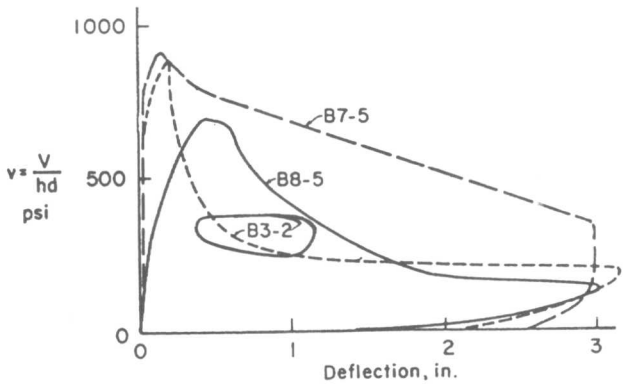
| | |
|---|---|
| Reference: | Barda (1972), Barda, Hanson, & Corley (1976) (Lehigh Univ.) |
| Specimen: | B3-2 |



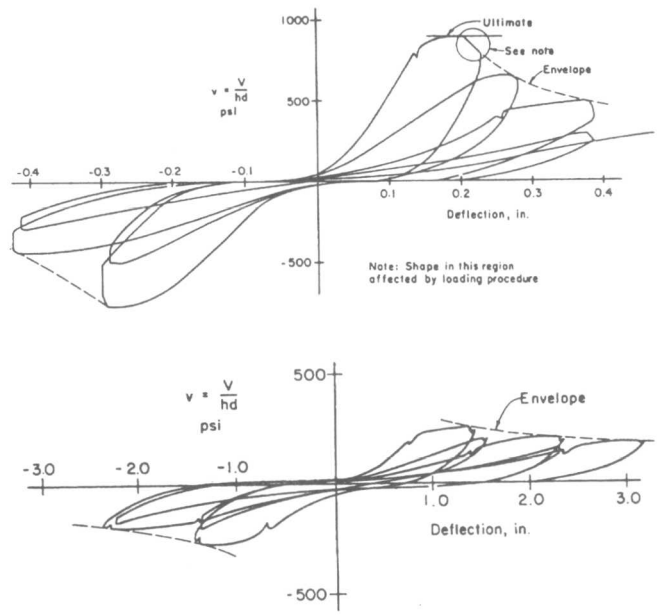

Test specimen at ultimate load
$\Delta = 0.2$ in $\Delta/h_w = 0.005$ $\lambda_Q = 1.0$



Test specimen at conclusion of loading
$\Delta = 3.0$ in $\Delta/h_w = 0.080$ $\lambda_Q = 0.2$




Envelope of response




Hysteretic response

| Provided Information | Calculated Values |
|---|---|
| $h_w = 37.5$ " | $P = 4.9$ k |
| $f_y = 60$ ksi | $M_n = 1700$ k-1 |
| $f_c' = 3920$ psi | $\frac{V}{b_w l_w}$ corresponding to $M_n = 1810$ psi |

| $\Delta$ | $\Delta/h_w$ | $\lambda_Q$ |
|---|---|---|
| 0.20 | 0.005 | 1.0 |
| 0.23 | 0.006 | 0.9 |
| 0.28 | 0.007 | 0.7 |
| 0.40 | 0.011 | 0.5 |
| 0.80 | 0.021 | 0.3 |
| 3.00 | 0.080 | 0.2 |